

REMARKS

The substitute specification together with the amended claims and amended drawings place the present U.S. national phase application in better form for examination on the merits.

Also attached hereto is an Abstract of the Disclosure presented on a separate sheet in conformity with the rules of practice.

Based upon the specification, drawing, and claim amendments to this national phase application, it is believed that the amended specification, the amended drawing, and the amended claims conform with U.S. formal requirements.

Additionally, the amended claims as hereinabove presented conform in substance with the corresponding amended claims that were examined in the international application. And based upon the acceptance by the International Preliminary Examining Authority of the invention as it was claimed in the amended claims that were presented in the course of the examination of the international application as meeting each of the novelty, the inventive step, and the industrial applicability criteria set forth in the Patent Cooperation Treaty, the claims as amended above are believed to conform both with U.S. formal requirements as well as with U.S. substantive requirements, and they are therefore believed to be in allowable form. Accordingly, an early Notice of Allowance is in order and is respectfully solicited.

Should the examiner have any question after considering this Preliminary Amendment, he is cordially invited to telephone the undersigned attorney so that any

such question can be quickly resolved in order that the present application can proceed toward allowance.

Respectfully submitted,



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Attachments: Attachment A

Attachment B

Abstract of the Disclosure

Annotated drawing sheets showing the changes

Replacement drawing sheets including the changes

AMENDMENTS TO THE DRAWING

Appended hereto as attachments are replacement formal drawing sheets to replace the drawings that were included in the published PCT application. The PCT drawings have been amended to delete the PCT application and publication numbers, to provide identifying legends for the elements represented by boxes in Figures 1 through 4, and to provide larger figure designations.

Also appended hereto are copies of the published PCT drawings showing in red the amendments that are reflected on the attached replacement drawing sheets.

ATTACHMENT B**SUBSTITUTE SPECIFICATION**

(Showing All Changes Made to the Specification in International Application No.
PCT/SE2004/001243)

**METHOD OF CONVEYING GEOGRAPHICALLY CONDITIONED INFORMATION TO
VEHICLE OR INDIVIDUALS****BACKGROUND OF THE INVENTION****FIELD OF THE INVENTION**

The present invention relates to a method of conveying geographically governed information.

DESCRIPTION OF THE RELATED ART

Systems are known with which information concerning traffic situations in towns, cities, etc., ~~for example~~ can be transmitted, for example, by conventional radio transmission. One problem in this regard is that the information transmitted covers an entire area, normally an entire city or town, that is within range of the radio transmitter. This means that the information is relevant solely to those motorists that are located in the vicinity of a traffic accident for instance. The information is ~~redundant~~ not relevant with respect to other motorists.

There is, of course, a need to provide information, for instance information related to a traffic situation, on a more local basis, with the aid of a system that delivers different types of information to different geographical areas, for instance to different parts of a city or town, or to different parts of a larger geographical area, or to deliver some other type of information. There is also a need to display provide information of a different type to that related to a traffic situation, for instance

information concerning service stations and restaurants disposed along a road network. Such information is then generally displayed on signs displayed placed along the roads or highways concerned.

There is also a need to transmit information at a given time point prior to the subject of said information being discovered, noticed, or taking place.

SUMMARY OF THE INVENTION

The present invention satisfies ~~these requirement~~ those requirements with regard to traffic situations and also with regard to other information directed to motorists. The subject matter described below can also be applied to individuals, i.e., to the presentation of information to separate individuals.

Accordingly, the present invention relates to a method of transmitting geographically governed information to automotive vehicles or to individuals, depending on the location of said vehicle or individual, ~~wherein the invention is characterised by~~ . The method includes determining the exact or approximate position of the vehicle or the individual in relation to fixedly disposed units, for radio communication between said the units and a communications unit in said the vehicle or carried by said the individual ;~~by causing a~~ A computer and associated database ~~to contain~~ contains information which includes different data relevant to different geographical areas ;~~by causing said~~ The computer ~~to send~~ sends relevant information to a receiving unit in each and every one of the vehicles whose positions have been determined, and in accordance with the geographical area in which the vehicle or the individual are is located.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described in more detail, partly with reference to an exemplifying embodiment of the invention shown in the accompanying drawings, in which

Fig. 1 is a diagrammatic illustration of a communications link;

Fig. 2 is a block diagram illustrating the application of the invention in accordance with a first embodiment;

Fig. 3 is a block diagram illustrating the application of the invention in accordance with a second embodiment;

Fig. 4 is a block diagram illustrating the application of the invention in accordance with a third embodiment; and

Fig. 5 is a diagrammatic illustration of various roads in a road network.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention relates to a method of sending geographically governed information to automotive vehicles or to individuals, depending on the location of said vehicle the vehicles or individuals

According to the invention, the exact or approximate position of the vehicle or individual is determined relative to spaced fixed units, for radio communication between said the units and a vehicle-carried or individual-carried communications unit.

Known to the art are several different kinds of automatic identification systems that use radio frequencies, so-called RFID (Radio Frequency Identification), and which

include identification tags (ID-tags) and communicators. Applicants provide such identification systems. In one such system, shown in Fig. 2, the communicators 10-12 constitute the fixed fixedly disposed units for radio communication between said the units and a vehicle-carried communications unit in the form of an ID-tag or transponder 6, 8, 9, see fig. 2.

Also, shown in fig. Fig. 1 is a vehicle identification communications unit. The communications unit includes a transponder 1 and a communicator in the form of a transceiver unit 2. The communicator 2 is adapted to send an inquiry signal 3 to the transponder 1. The transponder is adapted to receive the inquiry signal and therewith to reflect and modulate said the signal. The communicator 2 is adapted to receive the reflected signal 4 and to decode its information content.

The Referring once again to Fig. 2, the ID-tag 6, 8, 9 is conveniently applied to the inner surface of the windscreen windshield of the vehicle to be identified. The vehicle identity can be read by a communicator 10-12 at a given smaller distance from the vehicle, such as a distance of from 5-10 metres meters, for instance. Depending on the design of the system, it is also possible to read and write-in other information contained in the ID-tag with the aid of the communicator 10-12, in addition to reading the identity of the vehicle.

The relatively short range makes possible communication with the ID-tags within a geographically limited communications area.

According to a first embodiment of the invention, one such transponder system is used when practising practicing the invention.

The transceiver unit is 10, 11, 12 is suitably placed at a portal that extends over all traffic lanes. The transceiver thus reads the transponders that pass through the portal.

The transceiver unit 10, 11, 12 is connected to a main data system that includes a database 7 and a computer 16. The connection to the main data system 5, and 7, 16 ~~may~~ can be a cable connection, a radio connection, a W-Lan connection, a GSM/GPRS/G3 connection, or the like.

Because the vehicle passes a ~~communicator~~ transceiver unit 10-12, which reads the vehicle-carried transponders 6, 8, 9 and results in read data being transferred to the computer, the vehicle will be identified in the ~~data system~~ database 7.

According to the invention, a computer 16 and its associated database 7 in the main data system ~~is caused to contain~~ contains information that includes various items of data that are relevant to different geographical areas.

This The information ~~may~~ can concern traffic situations at different places, advertisements, information ~~of~~ on the distance to the next gas station, restaurants, etc., or other information relevant to a vehicle-passenger with respect to the geographical position of said the vehicle.

According to the present invention, the computer 16 ~~is caused to send~~ sends the relevant information to a receiving unit 14, 15 in each of the vehicles whose position has been determined, and ~~depending on~~ based upon the geographical area in which the vehicle is located.

According to one preferred embodiment, the receiving unit is comprised of includes a mobile telephone 15 or a vehicle-carried computer 14 said . The telephone 15 or computer 14 being is adapted to receive an information-carrying signal via a mobile telephone network, for instance in the form of an SMS-message, an MMS-message, an E-mail message, or a voice message.

According to a first embodiment of the invention, each vehicle is equipped with said a communications unit in the form of a transponder 6, 8, 9 which that can be read by means of respective permanently placed or fixed units . The fixed units are in the form of a communicator which includes a transceiver unit 10, 11, 12 which communicator is caused to send and sends an inquiry signal to the transponder , wherein the . The transponder (6, 8, 9) is designed to answer the inquiry signal and therewith caused then to transfer the transponder-related identification information to the communicator, which is caused to receive this receives that identification information. Communicators are placed along the stretches of road located in the various geographical areas in which it is desired to present said information, wherein each communicator that reads a transponder is caused to send said sends the identity information to said the computer 16, and wherein said the geographically governed information is then sent to said the vehicle-carried receiving unit.

By each vehicle "each vehicle" is meant each vehicle that is connected to the system included by the invention. For instance, it is conceivable that the owner of a vehicle subscribes to the system against the payment of a certain fee and therewith receives a transponder. In this that regard, an ID-number can be stored in the

transponder and tied to the owner of the vehicle in ~~said~~ database 7, together with the mobile telephone number to the vehicle-carried receiving unit.

According to one preferred embodiment of the invention, the transponder is a so-called RFID-transponder.

According to a highly preferred embodiment of the invention the approximate position of the vehicle and the direction in which it is being driven are determined when the vehicle-carried transponder 6, 8, 9 has been read by two or more mutually sequentially located communicators 10-12.

Two or more mutually sequential readings enable the data system to determine the travel direction of the vehicle and its average speed. ~~This That~~ knowledge can be used as a basis for deciding which information shall is to be sent to the vehicle-mounted receiving unit 14, 15. ~~This That~~ is illustrated in fig. Fig. 5, in which the reference numerals 40-44 identify different stretches of a road, ~~wherewith~~ the reference numerals 45-48 denote ~~said the~~ permanently placed units for radio communication, ~~and wherewith~~ the reference numerals 49, 50 denote restaurants, and the reference numeral 51 denotes a gas filling station.

For instance, when the vehicle has been read at by communicator 46 and then at by communicator 45, the inventive system is able to send a message to the effect that a restaurant 49 lies within the range of 5 km, for instance. The same applies to a vehicle that has been read at by communicator 46 and then again at by communicator 47. When a vehicle has been read at by communicator 46 and then at 47 by communicator 48, the system according to the present invention is able to send a

message to the effect that a filling station, gas station 51, lies within the range of 3 km, for instance.

However, two messages can be sent to a vehicle that passes at 45, namely a message to the effect that a restaurant 49 is situated along road 40 to the left in fig. Fig. 5 of the present location of the vehicle, and a message to the effect that a restaurant 50 is situated along road 43. This That information can then be evaluated by the driver or passengers of the vehicle.

According to a second embodiment of the invention, shown in Fig. 3, each vehicle is equipped with said a communications unit in the form of a mobile telephone 26, 28, 29 and the. The approximate position of said the telephone is established through the medium of said the permanently placed units in the form of base stations 20-22 belonging to a mobile telephone system, wherein information relating to the position of the mobile telephone 26, 28, 29 identified by respective base stations 20-22 is transferred to said computer 16, and wherein said the geographically governed information is then sent to the vehicle-carried receiving unit, said receiving unit being the said mobile telephone 26, 28, 29. Thus, in the case of this embodiment the mobile telephones and base stations are used to determine the exact or approximate position of the vehicle, instead of transponders and communicators.

Correspondingly to the method illustrated in fig. Fig. 5, it is preferred in the case of this second embodiment that the approximate position of the mobile telephone 20-22 26, 28, 29 and the direction in which the vehicle travels are determined when the mobile telephone is in the area covered by a base station after having been located

within the area covered by an adjacent base station. The reference numeral numerals 45-48 in fig. Fig. 5 denote base stations that are relevant in this latter case.

According to a third embodiment, shown in fig. Fig. 4, each vehicle is equipped with a communications unit in the form of a vehicle number plate or registration plate 36, 38, 39, whose registration number can be read optically by means of said the permanently placed units in the form of video cameras 31-32. These video cameras are spaced along stretches of road in different geographical areas within which it is desired to send information. Each video camera that reads a registration number is caused to transfer this transfers that number to the computer 16, wherewith after which the geographically governed information is then sent to said the vehicle-carrying receiving unit 14, 15.

According to a preferred embodiment, some of said the geographically governed information is sent to respective receiving units 14, 15 only at given time intervals.

According to a further embodiment of the invention some of said the geographically governed information is sent to respective receiving units 14, 15 only once or only a predetermined number of times.

Thus, the present invention allows information to be sent to vehicles in accordance with their geographical positions at that time.

It has been said in the aforegoing above that such information may can relate to traffic situations at different places, advertisements, information relating to distances to gas stations, restaurants, etc., or other vehicle/passenger relevant information referable to the geographical position of the vehicle.

For instance, traffic situation information ~~may~~ can relate to accidents, road works, traffic queues, alternative routes, and so on. Gas station information ~~may~~ can also concern vehicle service stations, eating places, etc. Advertisements ~~may~~ can relate to taverns, restaurants, hypermarkets, pleasure parks, things worth seeing, and so on.

Further embodiments are concerned with an individual as opposed to a vehicle; see figures Figs. 2 and 3. According to one embodiment concerning individuals, essentially all individuals have about their person a mobile telephone 26, 28, 29 that is able to function as a transponder in the aforesaid above-mentioned respect. For example, an individual who moves in the proximity of a base station 20-22 located close to a large store or the like ~~may~~ can receive on his/her mobile telephone 26, 28, 29 advertising material sent from the store. ~~This may mean That means~~ that the individual receives information about a product which he/she then purchases at precisely this that store. Another example is one where an individual approaches the platform of a subway station and passes a base station 20-22 and therewith receives information via his/her mobile telephone 26, 28, 29 as to the departure of the next train to a given destination, or information relating to a stoppage in subway traffic.

According to another embodiment, an individual ~~may~~ can be equipped with a transponder 6, 8, 9 which is not seated in some other technical device, such as a mobile telephone, and which communicates with communicators as described above. The transponder ~~may~~, however, can be included in some other technical device, such as a mobile telephone.

Although the invention has been described above with reference to a number of embodiments thereof, it will be obvious that the structural design of the various embodiments can be modified without a change in function.

It will therefore be understood that the present invention is not restricted to the aforedescribed above-described exemplifying embodiment thereof, since variations can be made within the scope of the accompanying claims.

CLAIMS

What is claimed is:

FIG 1

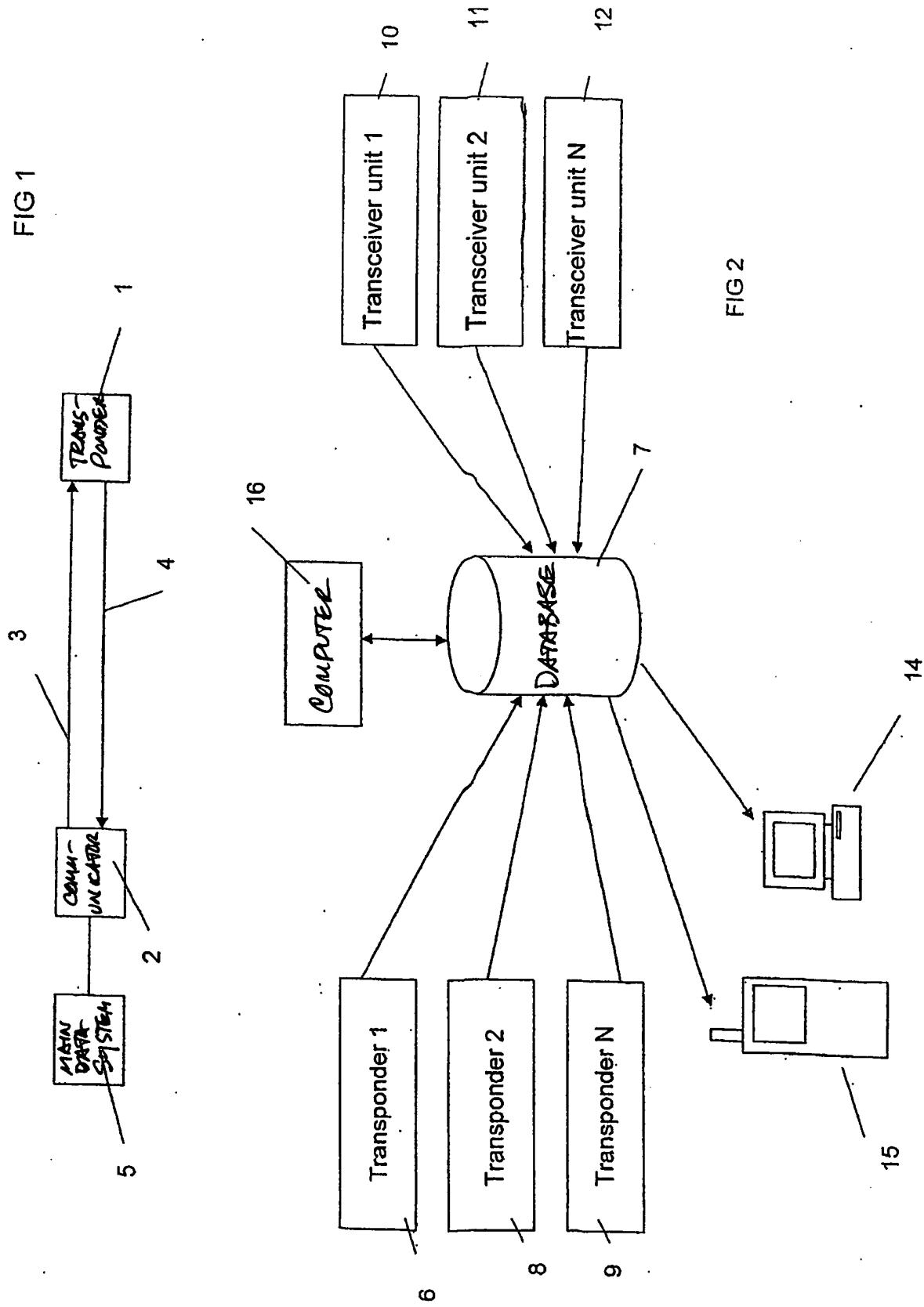


FIG 2

FIG 3

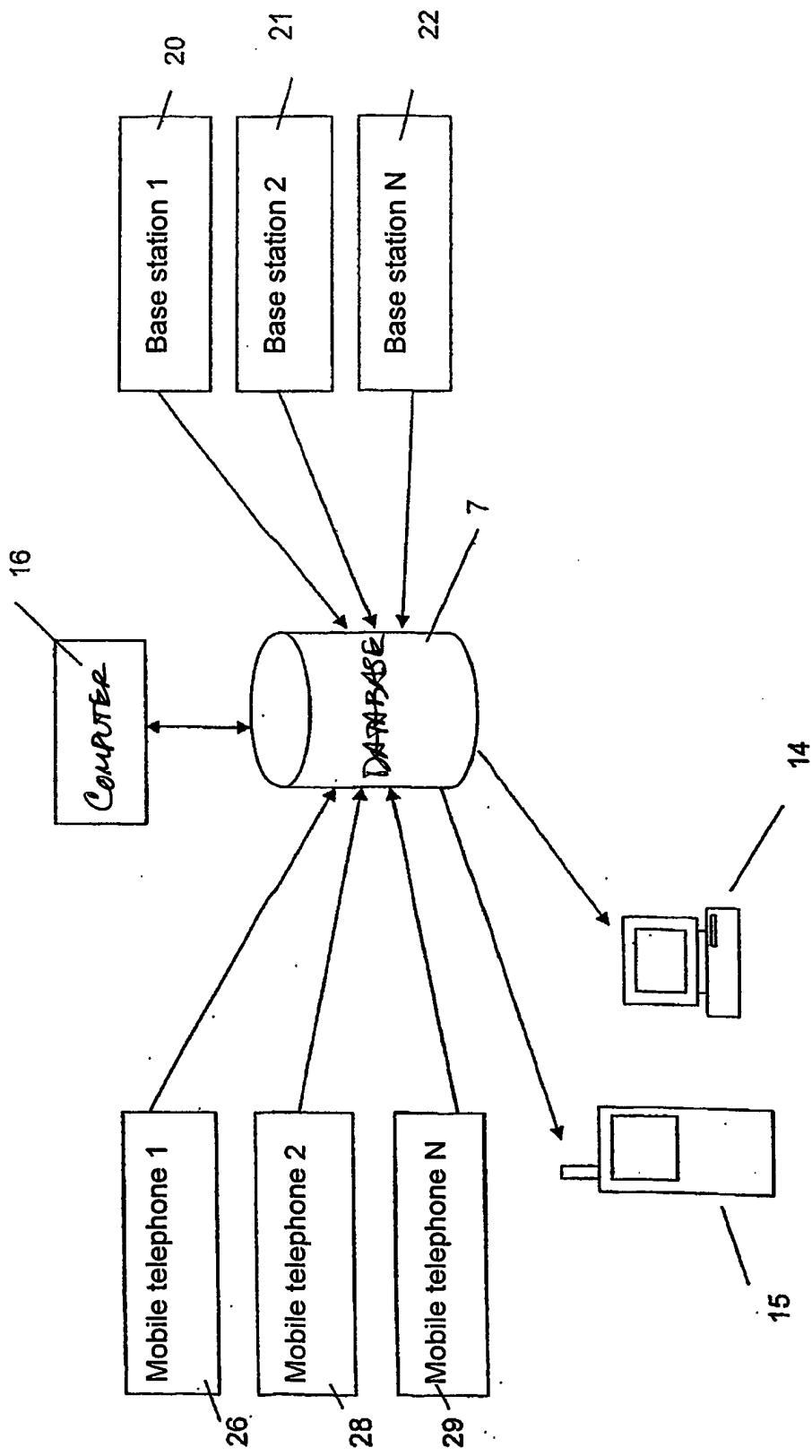
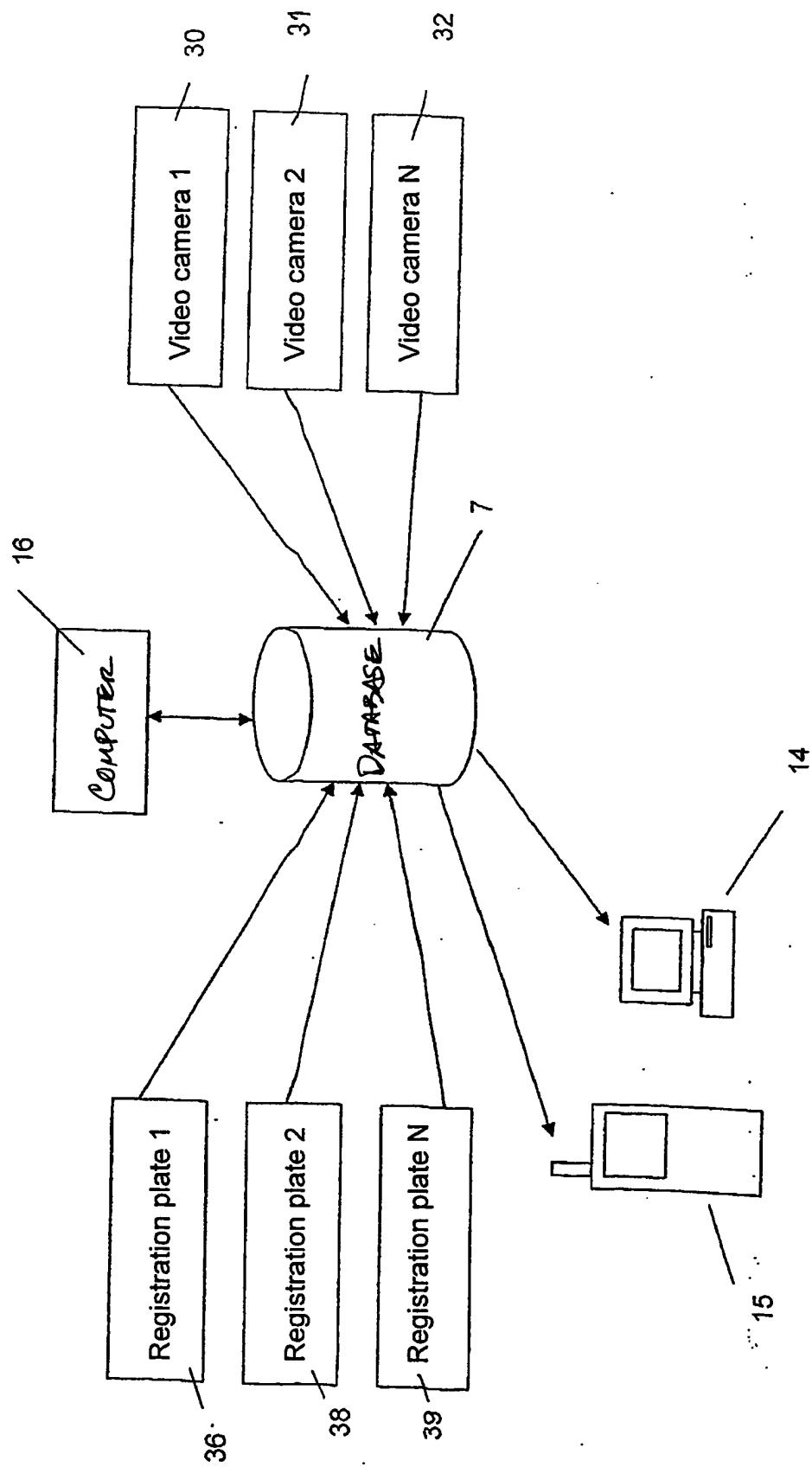


FIG 4



~~WO 2005/022483~~

~~PCT/SE2004/001243~~

FIG 5

